

ABSTRACT OF THE DISCLOSURE

A high efficiency optical feedback modulator and method of operation are provided. The high efficiency optical feedback modulator (30) includes an optical modulator (52) and an optical feedback system (54). The optical modulator (52) includes first and second optical inputs (66a, 68a) and first and second optical outputs (66b, 68b). The optical feedback system (54) is coupled between the second optical output (68b) and the second optical input (68a). The second optical input (68a) receives an optical feedback signal (70) from the optical feedback system (54). The first optical input (66a) receives an input light beam (56). The input light beam (56) and the optical feedback signal (70) are modulated with an electronic input signal (26a) to produce a high modulation depth optical signal (36) output from the first optical output (66b). The high efficiency optical feedback modulator (30) achieves a slope efficiency that is an order of magnitude better than conventional optical modulators, corresponding to an RF link gain improvement of 100 times better than conventional optical modulators.